Claims

1. A cDNA molecule encoding a human NAALAD-ase L protein having the amino acid sequence illustrated in figure 1 or a functional equivalent, derivative or bioprecursor thereof.

2. A cDNA molecule according to claim 1 which cDNA comprises the sequence of nucleotides illustrated in Figure 1.

3. A cDNA molecule encoding any of the splice variants of human NAALAD-ase L proteins having the amino acid sequences illustrated in Figure 3.

4. A cDNA molecule according to claim 3 which DNA molecule comprises the sequence of nucleotides illustrated in Figure 1 having respective nucleotide deletions or insertions encoding the respective splice variants of human NAALAD-ase L illustrated in Figure 3.

5. A cDNA molecule encoding a NAALAD-ase II protein having the amino acid sequence illustrated in Figure 4 or a functional equivalent, derivative or bioprecursor thereof.

6. A cDNA molecule according to claim 5 which cDNA molecule comprises the nucleotide sequence illustrated in Figure 4.

7. A cDNA molecule encoding a NAALAD-ase IV protein having the amino acid sequence illustrated in Figure 5 or a functional equivalent, derivative or bioprecursor thereof.

8. A cDNA molecule according to claim 7 having

the nucleotide sequence illustrated in Figure 5.

9. A nucleic acid molecule capable of hybridising to the cDNA molecules according to any of claims 1 and 8 under high stringency conditions.

10. A human NAALAD-ase L protein having an amino acid sequence encoded by the nucleotide sequence illustrated in Figure 1 or a functional equivalent or derivative thereof.

11. A human NAALAD-ase L protein according to claim 10 having the amino acid sequence illustrated in Figure 1 or including the insertions or deletions of the amino acid sequence illustrated in Figure 3.

12. A NAALAD-ase II protein or a functional equivalent, derivative or bioprecursor thereof, encoded by the nucleotide sequence illustrated in Figure 4.

13. A protein according to claim 12 which is a human NAALAD-ase II protein.

14. A protein according to claim 12 or 13 having the amino acid sequence illustrated in Figure 4.

15. A NAALAD-ase IV protein or a functional equivalent, derivative or bioprecursor thereof, having an amino acid sequence encoded by the nucleotide sequence illustrated in Figure 5.

16. A protein according to claim 15 which is a human NAALAD-ase IV protein.

17. A protein according to claim 15 or 16 having the amino acid sequence illustrated in Figure 5.

18. A DNA expression vector which comprises a cDNA molecule according to any of claims 1 to 8.

19. A vector according to claim 18 which vector comprises a cytomegalovirus promoter.

20. A vector according to claim 18 or 19 which comprises a sequence encoding a reporter molecule.

21. A host cell transformed or transfected with the vector according to any of claims 18 to 20.

22. A host cell according to claim 21 which cell comprises a prokaryotic or eukaryotic cell.

23. A host cell according to claim 21 or 22 which is a COS cell.

24. A transgenic cell, tissue or organism comprising a transgene capable of expressing a protein according to any of claims 10 to 17.

25. A transgenic cell, tissue or organism according to claim 24 wherein said transgene comprises a vector according to any of claims 18 to 20.

26. A cDNA or nucleic acid molecule according to any of claims 1 to 9, or a functional equivalent thereof, for use as a medicament.

27. Use of a cDNA or nucleic acid molecule according to any of claims 1 to 9, or a functional fragment thereof, in the preparation of a medicament in the treatment of neural diseases including Alzheimer's disease, schizophrenia, ALS, Parkinsons disease, peripheral neuropathy, Huntingdon's disease, acute brain injury, multiple sclerosis, exposure to

neurotoxins, peripheral nerve trauma, ischaemia or dementia.

28. A pharmaceutical composition comprising a nucleic acid or cDNA molecule according to any of claims 1 to 8 or a protein according to any of claims 10 to 17 together with a pharmaceutically acceptable carrier, diluent or excipient therefor.

29. A method of determining whether a compound is an inhibitor or an enhancer of activity of a NAALADase protein according to any of claims 10 to 17 which method comprises contacting said compound with NAALADase protein in the presence of [^{3} H] N-acetyl-L-aspartyl-L-glutamate (NAAG), and monitoring for the extent of hydrolysis NAAG compared to a control of said NAALAD-ase and NAAG which is not contacted with said compound.

30. A compound identifiable as in inhibitor or enhancer of NAALAD-ase activity according to claim 29.

31. A compound according to claim 30 for use as a medicament.

32. Use of a compound according to claim 30 in the preparation of a medicament for the treatment of neural diseases or disorders such as Alzheimer's disease, schizophrenia, ALS, Parkinsons disease, peripheral neuropathy, Huntingdon's disease, acute brain injury, multiple sclerosis, exposure to neurotoxins, peripheral nerve trauma, ischaemia or dementia.

33. A pharmaceutical composition comprising a compound according to claim 30 together with a pharmaceutically acceptable carrier, diluent or

excipient therefor.

34. A method of identifying a compound which is an inhibitor or an enhancer of expression or activity of a NAALAD-ase protein according to any of claims 10 to 17 which method comprises contacting a host cell, tissue or organism expressing said protein with a compound to be tested and monitoring the expression or activity of said protein compared to a control which comprises said cell expressing said protein but which has not been contacted with said compound.

35. A method according to claim 34 wherein said NAALAD-ase expressing cell comprises a host cell according to any of claims 21 to 23 or a transgenic cell, tissue or organism according to claims 24 or 25.

36. A method according to claim 35 wherein said monitoring step comprises monitoring for the expression of said reporter molecule.

37. A compound identifiable as an inhibitor or an enhancer of expression or activity according to the methods of any of claims 34 to 36.

38. A compound according to claim 37 for use as a medicament.

39. Use of a compound according to claim 37 in the preparation of a medicament for treating neural disorders such as Alzheimers's disease, schizophrenia, ALS, Parkinsons disease, peripheral neuropathy, Huntingdon's disease, acute brain injury, multiple sclerosis, exposure to neurotoxins, peripheral nerve trauma, ischaemia or dementia.

40. A pharmaceutical composition comprising a

compound according to claim 37 together with a pharmaceutically acceptable carrier, diluent or excipient therefor.

41. A method of quantifying enzyme activity which method comprises

(a) contacting an enzyme of interest with a radiolabelled hydrolysable substrate thereof in the presence of SPA beads;

(b) stopping said reaction by adding glycine buffer; and

(c) monitoring the signal from said substrate bound to said beads.

42. A method of identifying a compound which is an inhibitor or an enhancer of activity of an enzyme, said method comprising;

(a) contacting an enzyme of interest with a radiolabellel hydrolysable substrate thereof in the presence of SPA beads and said compound to be tested;

(b) stopping said reaction by adding glycine buffer;

(c) monitoring the signal from the substrate bound to said beads compared to a control which has not been contacted with said compound.

43. A method according to claim 41 or 42 wherein said substrate comprises [^{3}H] NAAG and said enzyme comprises a NAALAD-ase enzyme.

44. A method according to any of claims 41 to 43 wherein said enzyme comprises a NAALAD-ase according to any of claims 10 to 17.

45. A compound identifiable as an inhibitor or an enhancer of NAALAD-ase activity according to the method of claims 43 or 44.

46. A pharmaceutical composition comprising a compound according to claim 45, together with a pharmaceutically acceptable carrier, diluent or excipient thereof.

47. A compound according to claim 45 for use as a medicament.

48. Use of a compound according to claim 45 in the manufacture of a medicament for treating neural disorders such as Alzheimers's disease, schizophrenia, ALS, Parkinsons disease, peripheral neuropathy, Huntingdon's disease, acute brain injury, multiple sclerosis, exposure to neurotoxins, peripheral nerve trauma, ischaemia or dementia.